CLAIMS

What is claimed is:

1. A method for computer-assisted medical navigation or pre-operative treatment planning, said method comprising:

detecting a position of a patient or a part of a patient's body;

detecting positions of medical treatment devices or treatment-assisting devices; and

assigning the detected positions to body structure data, said body structure data being obtained from a three-dimensional generic model.

2. The method as set forth in claim 1, further comprising:

adapting the three-dimensional generic model by data linking with patient-characteristic, two-dimensional detection data.

3. The method as set forth in claim 1, further comprising:

jointly using the body structure data in assignment with the detected positional data within the context of assisting the navigation or treatment planning.

4. The method as set forth in claim 1, wherein the body structure data is provided in the form of a tomographic image data set.

5. The method as set forth in claim 1, wherein the generic model includes at least one of (i) a typical or average body structure; (ii) a statistical model of said body structure based on statistical evaluations of an indefinite number of image data sets; (iii) a multitude of body structures of the same type; and (iv) a two- or three-dimensional data set of a body structure and a geometric model.

6. The method as set forth in claim 2, wherein the patient-characteristic data is diagnostic data obtained from the patient, which includes at least one of:

(i) x-ray image data from bi-planar or multi-planar x-ray images produced before or during treatment;

(ii) computer tomography or nuclear spin tomography image data;

(iii) digitally reconstructed x-ray image data;

(iv) acquired point-positional information of the patient's body structure; and

(v) data on size, weight or lengths of the body section or one or more limbs of the patient.

7. The method as set forth in claim 6, wherein the acquired point-positional information of the patient's body structure includes natural or artificial landmarks.

8. The method as set forth in claim 2, wherein adapting the three-dimensional generic model includes:

manually adapting with the assistance of image representation.

9. The method as set forth in claim 8, wherein the manually adapting includes one of (i) offsetting points and landmarks on a screen output using a user-interface means, and (ii) shifting, rotating, stretching or compressing the generic model on a screen output using a user-interface means.

10. The method as set forth in claim 2, wherein adapting the three-dimensional generic model includes:

automatic image fusion by automatically identifying particular anatomical features.

11. The method as set forth in claim 2, wherein adapting the three-dimensional generic model includes:

registering and/or fusing digitally reconstructed x-ray images of the generic model and digitally reconstructed x-ray images from computer tomography or nuclear spin tomography image data sets; and

calculating the adapted body structure data using computer-assistance.

12. The method as set forth in claim 3, said method including:

obtaining positional data while determining patient-characteristic detection data, said obtaining including at least one of (i) acquiring landmark positions, and (ii) registering x-ray imaging in a navigation system ;

using the obtained positional data to register the adapted body structure data in a navigation system, and visually displaying or using treatment devices or treatment-assisting devices in their registration to the adapted body structure.

13. The method as set forth in claim 2, further comprising:

superimposing the three-dimensional generic model with patient-specific x-ray images; and

adapting a projection of the model to the respective x-ray images.

14. The method as set forth in claim 13, wherein projecting anatomic landmarks or geometries in the patient-specific x-ray images is automatically or manually identified, and projecting model structures is adapted to the two-dimensionally identified landmarks.

15. The method as set forth in claim 14, wherein the model is adapted using a transformation guideline which also enables information stored in the model to be appropriately modified, such that a data set of the patient consisting of tomographic images can be used for navigation.

16. The method as set forth in claim 15, further comprising:

displaying the patient data set as a digital reconstructed radiograph (DRR); and

comparing the patient data set with the patient-specific data to automatically or manually verify the model.

17. The method as set forth in claim 16, wherein the image data set is adapted by way of superimposing patient-specific x-ray images which represent a two-dimensional summation image from a defined direction of projection, and projecting the three-dimensional generic model onto said summation image.

18. The method as set forth in claim 17, wherein a deforming and rotating guideline obtained for the model is applied to the information stored in the model, to generate a three-dimensional image data set or to deform an already existing image data set with the aid of said guideline.

19. A program which, when running on a computer or loaded on a computer, carries out the steps of:

detecting a position of a patient or a part of a patient's body;

detecting positions of medical treatment devices or treatment-assisting devices; and

assigning the detected positions to body structure data, said body structure data being obtained from a three-dimensional generic model.

20. A computer program storage medium comprising a program as set forth in claim 19.